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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/501,078	02/09/2000	Arnon Netzer	180/01261	3371

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EXAMINER

WON, YOUNG N

ART UNIT	PAPER NUMBER
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2155

DATE MAILED: 08/21/2003

15

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/501,078

Applicant(s)

NETZER ET AL.

Examiner

Young N Won

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 June 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5,7-11,13,17,18 and 27-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5,7-11,13,17,18 and 27-34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 14.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

1. Claims 26 and 31 have been amended, and claims 1-5, 7-11, 13, 17, 18, and 26-34 are pending in this action.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-5, 7-11, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nguyen et al. (US 5,712,851 A) in view of Baker-Harvey (US 6,385,638 B1).

As per claim 1, Nguyen teaches a method (see abstract) of scheduling the handling of data from a plurality of channels, comprising: accumulating data from a plurality of channels (see col.2, lines 1-4), at respective predetermined input rates (see col.3, lines 2-5); providing data of each of the plurality of channels, at respective predetermined output rates (see col.3, lines 15-17); scheduling a processor (see abstract: "processor for scheduling"; col.2, line 15; and col.3, line 2) to handle the

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accumulated data from at least one first one of the channels (see col.3, lines 9-12), without interruption (see col.3, lines 5-7), once during a first cycle time (see col.2, lines 9-19), defined by the respective input and output rates of the first channels (see col.3, lines 2-5 & 15-17); and scheduling the processor to handle the accumulated data from at least one second one of the channels, without interruption (see col.3, lines 5-7), once during a second cycle time different from the first cycle time (see col.2, lines 9-19), the second cycle time being defined by the respective input and output rates of the second channels (see col.3, lines 2-5 & 15-17). Nguyen does not teach that the system is a server. Baker-Harvey teaches of a scheduler system that is a server (see col.17, lines 15-17). It would have been obvious to a person of ordinary skill in the art, at the time the invention was made to employ the teachings of Baker-Harvey within the system of Nguyen, by implementing a server comprising of the functionality of scheduler system, because servers are computing devices with a processor for performing a single dedicated operation or duty such as routing or switching, retrieving and storing, hosting web pages, ect. Therefore, servers are interchangeable with computers, routers, bridges, switches, or anything that has a processor and performs dedicated operations.

As per claim 2, Nguyen further teaches wherein the first cycle begins concurrently with a second cycle (see col.2, lines 16-19 and col.3, lines 8-12 & 34-35).

As per claim 3, Nguyen further teaches wherein the first cycle time is an integer multiple of the second cycle time (see col.4, lines 12-23).

As per claim 4, Nguyen further teaches wherein scheduling the processor to handle the accumulated data comprises scheduling, the processor, during the second

cycle, to handle the accumulated data from substantially all the at least one second channels, before scheduling the processor to handle data from any other of the plurality of channels (see col.2, lines 9-12 & 22-24).

As per claim 5, Nguyen further teaches wherein scheduling the processor to handle the accumulated data from the at least one first one of the channels comprises checking or determining whether the second cycle (short cycle) has elapsed and scheduling the processor to handle the accumulated data from one of the at least one first channels (long cycle channel) only if the second cycle (short cycle) has not elapsed (see claim 26 rejection above).

As per claim 7, Nguyen further teaches wherein the scheduling comprises scheduling the processor to handle the accumulated data from at least one of the second channels at least twice before scheduling the processor to handle data from at least one of the first channels (see col.3, 26-28; and col.4, lines 12-15: **NOTE:** If the # of slots in the slot ring is determined by the VC with the lowest cell rate, then obviously a VC with a larger cell rate will occupy more slot ring, thereby causing the processor to handle the accumulated data at least twice).

As per claim 8, Nguyen further teaches wherein scheduling the processor to handle the accumulated data comprises allowing the: processor to utilize up to a predetermined amount of processing time for each channel (see col.2, line 6).

As per claim 9, Nguyen does not teach wherein the processor runs an operating system, which performs preemption; therefore by reasons of obviousness, Nguyen

further teaches wherein the processor does not run an operating system, which performs preemption.

As per claim 10, Nguyen further teaches wherein scheduling the processor comprises having the processor wait without handling data from any of the channels if all the channels were scheduled for handling during their respective current cycles (see col.3, lines 35-37).

As per claim 11, Nguyen teaches of further comprising measuring the waiting time of the processor in the first cycle and using the measured time in determining whether to accept handling data from an additional channel (see col.3, lines 36-34).

As per claim 13, Nguyen further teaches of further comprising processing an entire block of accumulated data of the scheduled channel responsive to the scheduling (see col.2, lines 15-19).

3. Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nguyen et al. (US 5,712,851 A) in view of Baker-Harvey (US 6,385,638 B1) and Gray et al. (US 5568402 A).

As per claim 17, Nguyen teaches of a remote access device, comprising: accumulating data from respective channels (see col.2, lines 1-4), at respective predetermined input rates and provide data of each of the plurality of channels, at respective predetermined output rates (see col.3, lines 2-5 & 15-17); a processor which handles the accumulated data (see col.3, lines 2-4); and a scheduler which schedules

the processor to handle accumulated data from a first channel once during a first cycle time (see col.3, lines 9-12), and data from a second channel once during a second cycle time different from the first cycle time, without interrupting the processor while it is processing data from a channel (see col.3, lines 9-12).

Nguyen does not teach that the remote access device is a server or that it comprises of a plurality of channel drivers. Baker-Harvey teaches of a server (see claim 1 rejection above) and channel drivers (see col.15, lines 21-22). It would have been obvious to a person of ordinary skill in the art, at the time the invention was made to employ the teachings of Baker-Harvey within the system of Nguyen, by implementing a driver for the plurality of channels within the scheduler system, because without drivers, the processor would not know that the channels exists and therefore would not accumulate the data from that channel.

Nguyen does not teach wherein the scheduler schedules the processor to handle accumulated data defined by the timing of the driver of the first channel. Gray teaches wherein the scheduler schedules the processor to handle accumulated data defined by the timing of the driver of the first channel (see col.5, lines 8-10). It would have been obvious to a person of ordinary skill in the art, at the time the invention was made to employ the teachings of Gray within the system of Nguyen, by implementing a scheduler to schedules the processor to handle accumulated data defined by the timing of the driver within the scheduler system, because this would enable the shortest possible transmission rate since the shortest time interval for an input or output of data cannot exceed the cycle time of channel drivers

As per claim 18, Nguyen further teaches wherein the scheduling comprises scheduling the processor to handle the accumulated data from at least one of the first channel at least twice before scheduling the processor to handle data from at least one of the second channel (see col.3, 26-28; and col.4, lines 12-15: **NOTE:** If the # of slots in the slot ring is determined by the VC with the lowest cell rate, then obviously a VC with a larger cell rate will occupy more slot ring, thereby causing the processor to handle the accumulated data at least twice).

4. Claims 26-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Witchey (US 5,563,885 A) in view of Miller et al. (US 5,987,031 A).

As per claim 26, Witchey teaches of a method of scheduling the handling of data (see col.2, lines 42-44), keeping track of a short cycle and a long cycle (see col.2, line 29: "variable input data rates" and col.11, lines 4-6), from a plurality of channels including at least one short cycle channel and at least one long cycle channel (see col.3, lines 62-66), comprising: accumulating data from the plurality of channels (see col.3, lines 62-66 and col.5, lines 38-41); in each cycle, scheduling a processor to handle the accumulated data from all the cycle channels, before scheduling the handling of data of any other cycle channels (see Fig.3; col.6, lines 11-25; and col.8, lines 34-41); determining whether a current cycle has elapsed after scheduling the processor to handle the data from all the cycle channels (see col.2, lines 57-63 and col.3, line 67 to col.4, line 3); and scheduling the processor to handle the accumulated

data from one of the at least another channel if the current cycle did not elapse according to the determining, if there is another cycle channel which was not scheduled yet during the current cycle (see col.2, lines 25-30 & 57-63 and col.6, lines 21-25 & 39-64).

Witchey does not teach that the scheduler system is a server. Miller teaches of a scheduler system that is a server (see col.3, lines 39-42). It would have been obvious to a person of ordinary skill in the art, at the time the invention was made to employ the teachings of Miller within the system of Witchey, by implementing a server comprising of the functionality of scheduler system, because servers are computing devices with a processor for performing a single dedicated operation or duty such as routing or switching, retrieving and storing, hosting web pages, ect. Therefore, servers are interchangeable with computers, routers, bridges, switches, or anything that has a processor and performs dedicated operations.

Witchey does not explicitly teach short or long cycle channels, but it would be inherent that "variable input rates" (see col.2, line 29) comprises of both short and long cycle channels. Furthermore, these differences are only found in the nonfunctional descriptive material and are not functionally involved in the steps recited as to patentably distinguish the invention. The handling, accumulating, scheduling, and determining of each channel "to determine an optimum cell output interval for each channel" (see abstract) would be performed the same regardless of the long or short cycle (variable) channel. Thus, this descriptive material will not distinguish the claimed invention from the prior art in terms of patentability, see *In re Gulack*, 703 F.2d 1381,

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1385, 217 USPQ 401, 404 (Fed. Cir. 1983); *In re Lowry*, 32 F.3d 1579, 32 USPQ2d 1031 (Fed. Cir. 1994). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to accumulate, determine, schedule, and handle any size cycle channel in a method of scheduling the handling of data in a system comprising plurality of channels, because such size of cycle channel does not functionally relate to the steps in the method claimed and because the subjective interpretation of the data does not patentably distinguish the claimed invention.

As per claim 27, Witchey teaches of further comprising determining whether the current short cycle has elapsed after scheduling the processor to handle the data from the long cycle channel, and scheduling the processor to handle the accumulated data from an additional long cycle channel, if the current short cycle did not elapse (see claim 26 rejection above; col.2, lines 25-30 & 57-63; and col.6, lines 39-64).

As per claim 28, Witchey teaches of further comprising of waiting, after scheduling the processor to handle the data from all the short cycle channels, until the beginning of the next short cycle without processing data from any channel, if all the long cycle channels were already scheduled during the current long cycle (see claim 26 above and col.6, lines 17-31).

As per claim 29, Witchey further teaches wherein the long cycle begins concurrently with a second cycle short cycle (see claim 26 above and col.6, lines 23-25).

As per claim 30, Witchey further teaches wherein the long cycle time is an integer multiple of the short cycle time (see claim 26 above and col.8, lines 11-21).

As per claim 31, Witchey teaches a method of scheduling the handling of a plurality of connections, comprising: accumulating data (see col.5, lines 38-41) from a plurality of connections requiring handling at respective predetermined rates (see col.2, line 67 to col.3, line2), by a remote access server (see claim 26 rejection above); determining for at least one of the connections a quality of service level and scheduling the processor to process data from the plurality of connections in an order determined responsive to the determined quality of service level (see col.6, lines 39 to col.7, line 45).

As per claim 32, Witchey further teaches wherein the scheduling comprises scheduling the processor to handle data from at least one first connection before handling data from at least one second connection having a lower quality of service level than the at least one first connection (see col.2, lines 4-8).

As per claim 33, Witchey teach of further comprising changing the quality of service level of at least one of the connections while accumulating the data and changing the order of scheduling responsive to the change in the quality of service level (see col.5, lines 38-52; col.6, lines 40-45; and col.7, lines 42-45).

As per claim 34, Witchey does not explicitly teach wherein if a channel is not processed in its respective cycle the channel suffers from starvation. The applicant's disclosure titled "Background of the Invention", page 1, lines 26-30 teach if a channel is not processed in its respective cycle the channel suffers from starvation.

Response to Arguments

5. Applicant's arguments filed June 23, 2003, have been fully considered but they are not persuasive.

In response to the arguments regarding claim 1, Witchey teaches that "cells of data can also come in "bursts" in ATM, and Nguyen teach that, "it is important to be able to change the cell rate of the scheduling mechanism for different services". These cited passages by the applicant/(applicant's representative) state an alternative or an addition to the system, that the system will be able to support, and does not in any way teach the only means.

Also, the passage on column 3, lines 2-5, does not relate to the rate at which the scheduler 10 operates on the accumulated data of all the channels together. Contrary to the argument the cited passage states: "the scheduler 10 by means of a processor unit 24 reads and processes one slot at a time in the slot ring at a predetermined rate" and further adds "for example, the maximum speed that the physical link of the endpoint device will allow", which clearly teaches that the transmitting device predetermined the input rate of the accumulating data from a particular channel that which the device is connect to.

Additionally, the ^C~~S~~ited reference location regarding the second clause of claim 1 is not column 3, lines 13-15, but rather column 3, lines 15-17. The applicant/(applicant's representative) is suggested to read the correct passage.

Lastly, although the examiner agrees that of the existence of "C2CS", Nguyen further adds that "(C2CS) 24 is part of the VC descriptor 20 and is used by the scheduler 10 to achieve a given cell rate for each VC". Furthermore, the "C2CS" is "measure in terms of the link cell rate" (see col.3, lines 15-22).

In response to the arguments regarding claim 2, addition of the cited passage and the previous arguments, claim 2 is inherent.

In response to the arguments regarding claim 4, the slot "includes a virtual channel identifier (VCID) of a virtual channel (VC) to be serviced", thus if the slot is "circularly processed in a continuous fashion", then clearly the VC is also serviced in a continuous fashion. Additional citations have been included to further clarify that Nguyen teaches this limitation.

In response to the arguments regarding claim 17, the reference of Gray is to teach the missing limitation, which is primarily the absence of the "channel driver". Nguyen teach all other limitations.

In response to the arguments regarding claim 26, the term "short cycle channel" and "long cycle channel" is subjective. Witchey teaches of "variable input rate" which teaches the limitation and the order in which the data is handled does not patentably distinguish the claimed invention, unless there is shown that such step is the only step in which the system is optimized. The applicant/(applicant's representative) is suggested to read the motivation of obviousness with regards to claim 26 rejection.

In response to the arguments regarding claim 31, the order in which the channels are processed are in fact responsive to the quality of service. Witchey clearly teaches

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that the nominal FIFO fullness is a parameter based on QOS, and clearly addresses the optimum cell transmission schedule is determined by the cell input interval average calculated for each channel FIFO (see col.6, lines 39 to col.7, line 45).

Conclusion

It is the duty of the Examiner in protecting the public to view the claims as broadly as it is written. The Examiner must interpret the claims as one of ordinary skill in the art, and will not conclude or assume the interpretation beyond the scope of what is written in the claims. The claims must clearly define the invention to overcome prior art and eliminate any obviousness to combine. To expedite the prosecution of the application, it would be in the best interest of the applicant to amend the claims to distinctly and accurately claim the invention whereby the claims avoid any ambiguities.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

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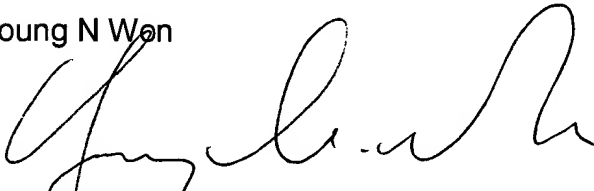
mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Young N Won whose telephone number is 703-605-4241. The examiner can normally be reached on M-Th: 8AM-6PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain T Alam can be reached on 703-308-6662. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Young N Won



August 13, 2003



HOSAIN T. ALAM
PRIMARY EXAMINER